IN THE CLAIMS:

Claims 1, 12, 18, 23 and 29 have been amended herein. All of the pending claims 1 through 3, 6 through 20, 23 through 31, 34 through 37 and 39 through 42 are presented below. Claim 42 herein has been withdrawn. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Currently Amended) A mold apparatus forming at least one metal bump from solder paste for direct placement on bond pads on a secondary substrate for transferring the solder paste to a contact pad of a substrate for heating during reflow into a solder ball, comprising:

a substrate having a substantially flat planar surface;

at least one cavity formed in the surface of the substrate, the cavity having substantially the same dimensions as the at least one metal bump, the at least one cavity having a shape of one of a trapezoidal shape, a hemispherical shape, rectangular shape, and a square shape forming a first shape of the solder paste substantially conforming to the shape of the cavity transferring the solder paste when slightly heated to the secondary substrate substantially in the shape of the at least one cavity and a second shape when reheated during the reflow thereof substantially drawing into a spherical shape held together by the surface tension of the solder material forming an approximately spherically shaped solder ball on a bond pad of the bond pads of the secondary substrate; ~~and~~

a release layer applied to the at least one cavity minimizing the wetting of solder paste on the at least one cavity formed in the surface of the substrate during heating thereof from the heating of the substrate; and

at least one heating strip located on another surface of the substrate.

2. (Previously Presented) The mold apparatus according to claim 1, wherein the release layer comprises a silicon oxide layer.

3. (Previously Presented) The mold apparatus according to claim 1, wherein the release layer comprises a silicon nitride layer.

4. (Canceled)

5. (Canceled)

6. (Previously Presented) The mold apparatus according to claim 1, wherein the at least one cavity has a depth in the surface of the substrate of about 28 micrometers.

7. (Previously Presented) The mold apparatus according to claim 1, wherein the release layer has a thickness ranging from about 200 Angstroms to 5 micrometers.

8. (Previously Presented) The mold apparatus according to claim 1, wherein the at least one cavity has a trapezoidal shape.

9. (Previously Presented) The mold apparatus according to claim 1, wherein the at least one cavity has a hemispherical shape.

10. (Previously Presented) The mold apparatus according to claim 1, wherein the at least one cavity has a rectangular shape.

11. (Previously Presented) The mold apparatus according to claim 1, wherein the at least one cavity has a square shape.

12. (Currently Amended) The mold apparatus according to claim 1, further comprising:

at least one heating strip located on another surface of the substrate <u>for heating the substate</u>.

13. (Previously Presented) The mold apparatus according to claim 1, further comprising:
a plurality of heating strips located on another surface of the substrate.

14. (Original) The mold apparatus according to claim 12, further comprising:
an electrical conductor connected to a portion of the at least one heating strip.

15. (Original) The mold apparatus according to claim 13, further comprising:
an electrical conductor connected to a portion of the plurality of heating strips.

16. (Previously Presented) The mold apparatus according to claim 1, wherein the substrate comprises semiconductor material.

17. (Previously Presented) The mold apparatus according to claim 1, wherein the substrate comprises ceramic material.

18. (Currently Amended) A solder mold apparatus forming at least one metal bump from solder paste for direct placement on a corresponding bond pad on a secondary substrate, comprising:

a substrate having a surface;

at least one cavity formed in the surface of the substrate, the cavity having substantially the same dimensions as the at least one metal bump, the at least one cavity having a shape of one of a trapezoidal shape, a hemispherical shape, rectangular shape, and a square shape forming a first shape of the solder paste substantially conforming to the shape of the cavity when slightly heated during transfer to the secondary substrate substantially in the shape of the at least one cavity and forming a second shape when reheated during the reflow thereof substantially drawing into a spherical shape held together by the surface tension of the solder material forming an approximately spherically shaped solder ball on a bond pad of the bond pads of the secondary substrate;

a layer applied to the at least one cavity minimizing the wetting of solder paste on the at least one cavity formed in the surface of the substrate during heating thereof to remove the solder paste from the substrate after the heating thereof; ~~and~~

at least one heating strip located on another surface of the substrate; and

a metal paste applicator.

19. (Previously Presented) The solder mold apparatus according to claim 18, wherein the layer comprises a silicon oxide layer.

20. (Previously Presented) The solder mold apparatus according to claim 18, wherein the layer comprises a silicon nitride layer.

21. (Canceled)

22. (Canceled)

23. (Currently Amended) The solder mold apparatus according to claim ~~22~~18, further comprising a metal paste dispenser, coupled to the metal paste applicator, to place a metal paste on the substrate.

24. (Previously Presented) The solder mold apparatus according to claim 23, further comprising a heating element to melt the metal paste to form a contact for application to the secondary substrate.

25. (Previously Presented) The solder mold apparatus according to claim 18, wherein the at least one cavity has a depth in the surface of the substrate of about 28 micrometers.

26. (Previously Presented) The solder mold apparatus according to claim 18, wherein the layer has a thickness ranging from above 200 Angstroms to 5 micrometers.

27. (Previously Presented) The solder mold apparatus according to claim 18, wherein the substrate comprises semiconductor material.

28. (Previously Presented) The solder mold apparatus according to claim 18, wherein the substrate comprises a ceramic material.

29. (Currently Amended) A mold apparatus forming at least one metal bump from solder paste with a width and a length for direct placement on bond pads on a secondary substrate, comprising:

a substrate having a surface; at least one cavity formed in the surface of the substrate, the at least one cavity having a selected width and a selected length in the surface, the selected width and the selected length being substantially the same as the width and length of the at least one metal bump, the at least one cavity having a shape of one of a trapezoidal shape, a hemispherical shape, rectangular shape, and a square shape forming a first shape of the solder paste substantially conforming to the shape of the cavity transferring the solder paste when slightly heated to the secondary substrate substantially in the shape of the at

least one cavity and a second shape when reheated during the reflow thereof for substantially drawing into a spherical shape held together by the surface tension of the solder material to form an approximately spherically shaped solder ball on a bond pad of the bond pads of the secondary substrate; ~~and~~

a layer applied to the at least one cavity minimizing the wetting of solder paste on the at least one cavity formed in the surface of the substrate during heating thereof by the heating of the substrate removing the solder paste therefrom; and

at least one heating strip located on another surface of the substrate.

30. (Previously Presented) The mold apparatus according to claim 29, wherein the layer comprises a silicon oxide layer.

31. (Previously Presented) The mold apparatus according to claim 29, wherein the layer comprises a silicon nitride layer.

32. (Canceled)

33. (Canceled)

34. (Previously Presented) The mold apparatus according to claim 29, wherein the at least one cavity has a depth in the surface of the substrate of about 28 micrometers.

35. (Previously Presented) The mold apparatus according to claim 29, wherein the layer has a thickness ranging from about 200 Angstroms to 5 micrometers.

36. (Previously Presented) The mold apparatus according to claim 29, wherein the selected width and the selected length are substantially the same.

37. (Previously Presented) The mold apparatus according to claim 29, wherein the selected width is smaller than the selected length.

38. (Canceled)

39. (Previously Presented) The mold apparatus according to claim 29, further comprising:
at least one heating strip located on another surface of the substrate.

40. (Previously Presented) The mold apparatus according to claim 29, further comprising:
a plurality of heating strips located on another surface of the substrate.

41. (Previously Presented) The mold apparatus according to claim 29, wherein the substrate comprises semiconductor material.

42. (Withdrawn) An intermediate solder ball forming apparatus comprising:
a mold substrate comprising;

an upper surface,

a lower surface, and

at least one cavity formed in the lower surface of the substrate having a layer having a first degree of wettability relative to solder paste;

a carrier substrate disposed below the mold substrate comprising:

a surface abutting the lower surface of the mold substrate, and

at least one bond pad disposed on the surface of the carrier substrate below the at least one cavity formed in the lower surface of the mold substrate, the at least one bond pad having a second degree of wettability relative to solder paste that is greater than the first degree of wettability of the layer of the at least one cavity; and

solder paste disposed within the at least one cavity adjacent the layer thereof, gravity acting on the solder paste moving it from the layer of the at least one cavity to the bond pad disposed on the carrier substrate.